

Appl. No. 10/685,947
Amdt. Dated 10/15/2003
Reply to Office Action of 01/27/2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled).
2. (Currently Amended) The method of claim 2 further comprising receiving program code in the packet forwarding device after installation of the packet forwarding device in a packet communications network and wherein said monitoring, determining and automatically changing is implemented by the executing program code.
3. (Original) The method of claim 2 wherein receiving the program code comprises receiving a sequence of virtual machine instructions and wherein executing the program code comprises executing the sequence of virtual machine instructions using a virtual machine included in the packet forwarding device.
4. (Original) The method of claim 3 wherein receiving the sequence of virtual machine instructions comprises receiving a sequence of Java byte codes and wherein executing the sequence of virtual machine instructions using a virtual machine comprises executing the sequence of Java byte codes in a Java virtual machine included in the packet forwarding device.
5. (Currently Amended) In The a packet forwarding device, a method of claim 1 wherein comprising:
monitoring bandwidth consumption by one or more types of packet traffic received in the packet forwarding device comprising:
determining a measure of bandwidth consumption in the packet forwarding device due to traffic associated with a physical port on the forwarding device;
determining whether the bandwidth consumption by the one or more types of packet traffic exceeds a threshold; and
automatically changing assignment of at least one type of packet traffic of the one or more types of packet traffic from a queue having a first priority to a queue having a second

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priority if the bandwidth consumption computed based on an evaluation of traffic statistics substantially in real-time exceeds the threshold.

6. (Currently Amended) In The a packet forwarding device, a method of claim 1 wherein comprising:

monitoring bandwidth consumption by one or more types of packet traffic received in the packet forwarding device comprising determining a measure of bandwidth consumption in the packet forwarding device due to traffic associated with a particular network address;

determining whether the bandwidth consumption by the one or more types of packet traffic exceeds a threshold; and

automatically changing assignment of at least one type of packet traffic of the one or more types of packet traffic from a queue having a first priority to a queue having a second priority if the bandwidth consumption computed based on an evaluation of traffic statistics substantially in real-time exceeds the threshold.

7. (Original) The method of claim 6 wherein determining a measure of bandwidth consumption in the packet forwarding device due to traffic associated with the particular network address comprises determining a measure of bandwidth consumption due to traffic associated with a particular media access control (MAC) address.

8. (Currently Amended) In The packet forwarding device, a method of claim 1 wherein comprising:

monitoring bandwidth consumption by one or more types of packet traffic received in the packet forwarding device comprising determining a measure of bandwidth consumption in the packet forwarding device due to traffic associated with a particular communications protocol;

determining whether the bandwidth consumption by the one or more types of packet traffic exceeds a threshold; and

automatically changing assignment of at least one type of packet traffic of the one or more types of packet traffic from a queue having a first priority to a queue having a second

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priority if the bandwidth consumption computed based on an evaluation of traffic statistics substantially in real-time exceeds the threshold.

9. (Original) The method of claim 8 wherein determining a measure of bandwidth consumption in the packet forwarding device due to traffic associated with the particular communications protocol comprises determining a measure of bandwidth consumption in the packet forwarding device due to traffic associated with at least one of the following protocols: file transfer protocol (FTP), hyper-text transfer protocol (HTTP), transmission control protocol/internet protocol (TCP/IP).

10. (Currently Amended) A packet forwarding apparatus comprising:
a plurality of input/output (I/O) ports to transmit and receive packets of information;
first and second queues to buffer the packets prior to transmission via one or more of the I/O ports, packets buffered in the first queue having higher transmission priority than packets buffered in the second queue;
queue assignment logic to assign the packets to be buffered in either the first queue or the second queue according to a packet type associated with each packet, each of the packets being associated with at least one of a plurality of packet types; and
one or more agents to monitor bandwidth consumption by packets associated with a first packet type of the plurality of packet types and to automatically change assignment of packets associated with the first packet type from the first queue to the second queue if bandwidth consumption of packets associated with the first packet type and computed based on an evaluation of traffic statistics substantially in real-time exceeds a threshold.

11. (Original) The apparatus of claim 10 further comprising:
a processing unit coupled to the plurality of I/O ports, the processing unit including a memory and a processor; and
a data communications interface to receive program code in the memory of processing unit after installation of the packet forwarding apparatus in a packet communications network

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and wherein the one or more agents are implemented by execution of the program code in the processor of the processing unit.

12. (Original) The apparatus of claim 11 wherein the packet forwarding apparatus further comprises program code that, when executed by the processing unit, implements a virtual machine, and wherein the program code received via the data communications interface comprises a sequence of instructions that is executed by the virtual machine to implement one or more agents.

13. (Original) The apparatus of claim 12 wherein the program code received via the data communications interface includes a sequence of Java byte codes and wherein the virtual machine is a Java virtual machine.

14. (Original) The apparatus of claim 10 wherein the first packet type comprises packets associated with a particular one of the I/O ports.

15. (Original) The apparatus of claim 10 wherein the first packet type comprises packets comprises packets associated with a particular network address.

16. (Original) The apparatus of claim 15 wherein the particular network address is a particular media access control (MAC) address.

17. (Original) The apparatus of claim 10 wherein the first packet type comprises packets comprises packets associated with a particular communications protocol.

18. (Original) The apparatus of claim 17 wherein the particular communications protocol is a hyper-text transfer protocol (HTTP).

19. (Original) The apparatus of claim 17 wherein the particular communications protocol is a file transfer protocol (FTP).

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20. (Currently Amended) A communications network comprising a packet forwarding device, the packet forwarding device including:

a plurality of input/output (I/O) ports to transmit and receive packets of information from one or more other devices in the communications network

first and second queues to buffer the packets prior to transmission via one or more of the I/O ports, packets buffered in the first queue having higher transmission priority than packets buffered in the second queue;

queue assignment logic to assign the packets to be buffered in either the first queue or the second queue according to a packet type associated with each packet, each of the packets being associated with at least one of a plurality of packet types; and

one or more agents to monitor bandwidth consumption by packets associated with a first packet type of the plurality of packet types and to automatically change assignment of packets associated with the first packet type from the first queue to the second queue if bandwidth consumption of packets associated with the first packet type and computed based on an evaluation of traffic statistics substantially in real-time exceeds a threshold.

21. (Original) The communications network of claim 20 wherein the packet forwarding device further includes:

a processing unit coupled to the plurality of I/O ports, the processing unit including a memory and a processor; and

a data communications interface to receive program code in the memory of processing unit after installation of the packet forwarding device in the communications network and wherein the one or more agents are implemented by execution of the program code in the processor of the processing unit.

22. (Original) The communications network of claim 21 wherein the packet forwarding device further includes program code that, when executed by the processing unit, implements a virtual machine, and wherein the program code received via the data communications interface includes a sequence of instructions that is executed by the virtual machine to implement one or more agents.

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23. (Currently Amended) In a packet forwarding device, a method comprising:
monitoring an error rate associated with one or more types of packet traffic received in the packet forwarding device;
determining whether the error rate associated with the one or more types of packet traffic exceeds a threshold; and
automatically changing assignment of at least one type of packet traffic of the one or more types of packet traffic from a queue having a first priority to a queue having a second priority if the error rate computed based on an evaluation of error information substantially in real-time exceeds the threshold.

24. (New) The apparatus of claim 10 wherein the packet forwarding apparatus is a switch.

25. (New) The communications network of claim 20 wherein the packet forwarding device is a switch.